

REMARKS

This paper is responsive to an Official Action that issued in this case on February 14, 2002. In that Action, the Office rejected claims 30-32 and 34-37 under 35 USC §102 as being anticipated by U.S. Pat. No. 5,857,147 to Gardner et al. Furthermore, claim 37 was rejected under 35 USC §112, ¶2 as being indefinite. The Office also rejected claims 30-39 under the judicially-created doctrine of obviousness-type double patenting.

Responsive to the Official Action, applicant amends claim 37. In particular, claim 37 is amended to cure the "antecedent" problems noted by the Office. Claims 30-39 are in the case. Reconsideration of the present application is respectfully requested in view of the foregoing amendment and the following remarks.

An Illustrative Embodiment of Applicants' Invention

Time-division-multiplexed (TDM)-based fixed wireless-loop systems enable multiple access to a communications resource via allocated, periodically recurring "time slots." TDM-based fixed wireless-loop systems are advantageously arranged in a plurality of "cells," each of which contains a base station and a multiplicity of terminals. The base station of a given cell generates antenna beams for receiving transmission from terminals within the cell and generates other antenna beams for transmitting to terminals within the cell. Time-slot allocation and other base station activities in the system are regulated by a cell controller that is associated with each base station.

Some embodiments of applicants' invention are directed to a method of operating a TDM-based fixed wireless-loop system. In accordance with the illustrative embodiments of the method, time slots are advantageously allocated based on prevailing system interference. Such interference is caused by both "in-cell" and "out-of-cell" communications, both of which are advantageously, but not necessarily, considered in the inventive time-slot allocation method.

In accordance with the illustrative method, a request from a terminal for access to the "air" is denied unless suitable transmit *and* receive time slots are found. A "transmit" or "downlink" slot is a time slot that is used for base station transmissions to a terminal, while a "receive" or "uplink" slot is a time slot that is used for terminal transmissions to a base station.

A “suitable” transmit slot (*i.e.*, base station transmitter → terminal receiver) is defined in the specification as a slot in which:

- the interference level at the terminal receiver *due to other* in-cell and out-of-cell transmissions on the same time slot is low enough to enable satisfactory reception (at the terminal receiver); **and**
- the transmissions from the base station transmitter does not render unsuitable *other* communications links that are active.

A “suitable” receive slot (*i.e.*, base station receiver ← terminal transmitter) is defined in the specification as a slot in which:

- the interference level at the base station receiver *due to other* in-cell and out-of-cell transmitting terminals is low enough to allow satisfactory reception (at the base station receiver); **and**
- transmissions from the terminal transmitter will not render unsuitable *other* communications links that are active.

In some embodiments, all four of these requirements must be met before a time slot is allocated. This is an important feature of the inventive method, and one (of many) that distinguishes it from the prior art.

Claims 30-32 and 34-36 are not
Anticipated by Gardner et al.

As described above, before allocating a time slot to a terminal that is requesting to communicate with a base station (*i.e.*, establish a communications link), not only must the estimated interference levels at the requesting terminal and the base station (due to other links sharing the same time slot) be at acceptable levels, but the estimated interference levels at the other links (due to the requesting terminal coming on-the-air) must also be at acceptable levels. Consistent therewith, claim 30 recites a method for operating a fixed wireless loop system comprising:

receiving a request by a first terminal to establish a first communications link; and
allocating at least two temporal communication slots to said first terminal to support said first communications link when interference *caused by* and interference *received by* the first communications link are acceptably low.

According to the Office, Gardner et al. (“Gardener”) discloses the method recited by claims 30 through 37. The Office cites to the “Abstract” of the Gardner et al. for support.

Gardner discloses a method and apparatus for controlling the data rates for communications to and from a base station and a plurality of remote users. According to the method, the usage of the forward link communications resource (base station → remote users) is measured *or* (i.e., not both) the usage of the reverse link communications resource (base station ← remote users) is measured. The measured usage value for either the forward or reverse link resource is compared against at least one predetermined threshold value and the data rates are modified in accordance therewith. (See, Abstract.)

Gardner provides no disclosure, suggestion or motivation to allocate time slots to a terminal wishing to establish a communications link, wherein the allocation is based on the interference that is caused by and received by the communications link. Consequently, claim 30 is allowable over Gardner. Furthermore, claims 31 through 36, which are dependent upon claim 30, are likewise allowable based on such dependence (in addition to reciting a number of independently patentable features).

Claim 37 is not Anticipated
by Gardner et al.

Amended independent method claim 37 recites limitations that pertain to the illustrative method for allocating a time slot in a TDM-based fixed wireless-loop system. In particular, amended claim 37 recites a method for allocating a time slot to a first communications link wherein a second communications slot also uses the allotted time slot. The method comprises:

Accessing first archived data pertaining to mutual interference between said first communications link and said second communication link;

Accessing second archived data pertaining to interference experienced by said second communications link before said first communications link is established; and

Allocating said time slot to said first communications link if interference caused by and interference experienced by said first communications link are less than a predetermined level selected to provide suitable reception, as determined from said accessed first archived data and second archived data.

The "first archived data" is a data base that contains data pertaining to the mutual interference levels between every potential link within a cell controller's cell and every potential link within that cell controller's cluster. (See, e.g., description of "data base 45" at p. 16, line 15 through p. 20, line 18.) The "second archived data" is a list, maintained by

each cell controller, of in-cell and in-cluster "active links." The list contains, among other items, the interference experienced by base station receiver and the terminal receiver of each active link. As this list contains the estimated interference levels of active links, it does not include the affect (*e.g.*, interference caused by) the requesting terminal coming on-the-air. (*See, e.g.*, description of "list of active links 46" at p. 23, line 14 through p. 24, line 16.)

As described at p. 25, line 17 through p. 29, line 21, information from both data base 45 (*i.e.*, "first archived data") and the list of active links 46 (*i.e.*, "second archived data") are used to allocate a receive slot for uplink and a transmit slot for downlink.

Gardner provides no disclosure, suggestion or motivation to:

- access to two data archives (one containing mutual interference levels between a first communications link that is requesting access to the air and other communications links, including a second communications link, and the second data archive containing interference levels prevailing at active links before the first communications link is active)
- allocate time slots by determining, based on the accessed archived data, if the interference caused by and experienced by the first communications link are suitable for providing acceptable reception.

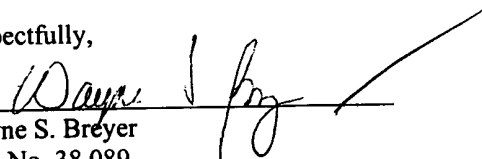
Consequently, claim 37 is allowable over Gardner.

Claims 33, 38 and 39 were not rejected over the prior art. But those claims, as well as claims 30-32 and 34-37 were rejected under the judicially-created doctrine of obviousness-type double patenting. A terminal disclaimer will be filed on the indication of allowable claims.

Conclusion

It is urged that claims 30-39 are allowable over the art of record. Consequently, applicants request that the Office withdraw the rejection of claims 30-32 and 34-37 under 35 USC §102.

Respectfully,


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